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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/648,815	08/26/2003	William F. Howard	WEAT/0313	4562

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EXAMINER
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COLLINS, GIOVANNA M

ART UNIT	PAPER NUMBER
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3672

DATE MAILED: 12/09/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/648,815

Applicant(s)

HOWARD ET AL.

Examiner

Giovanna M. Collins

Art Unit

3672

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 26 August 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-25 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 August 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 20040311.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Specification***

1. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: Wellbore Pumping Apparatus with Improved Temperature Performance and Method of Use.

### ***Drawings***

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: 31,33.

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: 54.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

1. Claims 1-6,10-13,15,16, 18-23, and 25 are rejected under 35 U.S.C. 102(b) as being anticipated by Kisman 6,039,121.

Kisman discloses (fig. 3) a downhole pumping apparatus, comprising a wellbore (16) having well fluids (9) received therein from a formation into which said wellbore extends, said well fluid having a natural height within said wellbore and an interface between said well fluid and a second, lower density fluid (at 12), at a location spaced from the terminus of said wellbore; a pump (50) locatable within said wellbore and positioned intermediate said terminus and said interface; and a cooling member located within said well (col. 7, lines 1-29).

Referring to claim 2, Kisman discloses said cooling member comprises a cooling zone located intermediate said pump and said terminus (col. 7, lines 1-29).

Referring to claim 3, Kisman discloses said cooling member further includes a pressure gradient in said well fluid (col. 7, lines 1-29).

Referring to claim 4, Kisman said cooling zone further includes a saturated liquid in said well fluid, and vapor evolves from said liquid in said cooling zone as the liquid enters a region of the cooling zone that is at a lower pressure (col. 7, lines 1-29).

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Referring to claim 5, Kisman discloses the evolving vapor cools the well fluid as it vaporizes (col. 7, lines 1-29).

Referring to claim 6, Kisman disclose (figs. 1-2) said wellbore (6) includes a footed wellbore (at 11) having a section thereof having a generally horizontal component and a span extending between a lower surface of said wellbore and an upper portion of said wellbore; said pump (50) is positioned at the lower surface of said wellbore and a space is provided between said pump and said upper surface of said wellbore; and vaporized gases naturally rise in the wellbore and through said space (col. 7, lines 1-29).

Referring to claim 10, Kisman discloses a method of pumping well fluids from a wellbore, comprising: providing a cooling zone (col. 7, lines 1-29) therein in the wellbore; cooling at least a portion of the fluid in the wellbore; and positioning a pump (50) in said wellbore in that portion of the fluid that is cooled in the wellbore.

Referring to claims 11-13 and 19-20, Kisman discloses the well fluid has a steam dissolved therein, and the steam vaporizes in the cooling zone the steam vapor evolves in the cooling zone, and the evolution cools the well fluid in the bore at and adjacent to the cooling zone(col. 7, lines 1-29).

Referring to claim 15, Kisman discloses the wellbore (6) includes a footed portion (at 11) having an upper surface and a lower surface separated by a wellbore span; the pump (50) has a width smaller than the span; and the pump is positioned in the footed portion of the borehole to provide a gap between the pump and the borehole upper surface.

Referring to claim 16, Kisman discloses (see Fig. 4) the steam, upon vaporization thereof, forms bubbles in the well fluid in the footed bore; and, the bubbles pass in the well fluid in the

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direction of the well head through the gap between the pump and the upper surface of the footed wellbore.

Referring to claim 18, Kisman discloses a wellbore, comprising, a generally vertical section (at 6) extending from a well head location and into the earth; a footed wellbore section (at 11) extending from said vertical section and having an entry section transitioning said footed wellbore section from the vertical profile of the vertical section to a footed section having a substantial horizontal component (at 1), the intersection region of said transition section and said footed section forming a heel location, well fluids located in said footed wellbore; a pump (50) located in said wellbore adjacent said heel location, and a cooling zone located in said footed wellbore (col. 7, lines 1-29).

Referring to claim 21, Kisman discloses said footed wellbore (at 11) includes opposed upper and lower surfaces separated by a bore span dimension; and said pump (50) has a width which is smaller than said span dimension.

Referring to claim 22, Kisman (fig 4) pump (50) is positioned adjacent said lower surface of said heel thereby providing a gas vent space between said pump and said upper surface (at 16) of said footed borehole.

Referring to claim 23, Kisman discloses said cooling zone (at 16) is located intermediate said pump location (50) and the terminus of said footed portion (at 11) of said borehole in the earth.

Referring to claim 25, Kisman discloses a tube (above element 50) extending inwardly of the borehole and connected to the fluid outlet of the pump.

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2. Claims 1 and 2 are rejected under 35 U.S.C. 102(e) as being anticipated by Skillman 6,533,033.

Skillman discloses (fig. 1) a downhole pumping apparatus, comprising a wellbore (6) having well fluids (14) received therein from a formation into which said wellbore extends, said well fluid having a natural height within said wellbore and an interface between said well fluid and a second, lower density fluid (col. 6, lines 65-68), at a location spaced from the terminus of said wellbore; a pump (52) locatable within said wellbore and positioned intermediate said terminus and said interface; and a cooling member (col. 8, lines 38-40) located within said well.

Referring to claim 2, Skillman discloses said cooling member comprises a cooling zone (col. 8, lines 38-4) located intermediate said pump (52) and said terminus.

***Claim Rejections - 35 USC § 103***

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

4. Claims 7-8, 14 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kisman '121 in view of Bridges et al. 4,524,827 and Bownes et al. (5,549,160).

Referring to claim 7, Kisman discloses the apparatus of claim 6 but does not disclose the pump is a progressing cavity pump. Bownes teaches using a progressive cavity pump with a rubber stator to pump well fluids (col. 3, lines 9-14). Progressive cavity pumps are well known in the art for removing well fluids. As one of ordinary skill in the art would be familiar with the use of progressive cavity pumps for removing well fluids, it would be obvious to one of ordinary

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skill in the art to modify the apparatus disclosed by Kisman to include a progressive cavity pump as taught by Bownes.

Referring to claim 8, Bownes teaches the pump includes a rotor that is rotatably driven by a rod extending down the well from a drive mechanism located adjacent the well (col. 3, lines 16-23).

Referring to claim 14, Kisman discloses the pump is made of material having lower resistance to temperature based breakdown (col. 11, lines 31-39) but does not disclose the pump is a progressive cavity pump. Bownes teaches using a progressive cavity pump to pump well fluids (col. 3, lines 9-14). Progressive cavity pumps are well known in the art for removing well fluids. As one of ordinary skill in the art would be familiar with the use of progressive cavity pumps for removing well fluids, it would be obvious to one of ordinary skill in the art to modify the apparatus disclosed by Kisman to include a progressive cavity pump as taught by Bownes.

Referring to claim 24, Kisman discloses the borehole of claim 23 but does not disclose a drive rod. Bownes teaches using a drive rod to mechanically drive a progressive cavity pump. Rod driven progressive cavity pumps are well known in the art for removing well fluids. As one of ordinary skill in the art would be familiar with the use of rod driven progressive cavity pumps for removing well fluids, it would be obvious to one of ordinary skill in the art to modify the apparatus disclosed by Kisman to include drive rod to drive the pump as taught by Bownes.

5. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kisman '121 in view of Bownes et al. '160 as applied to claim 8 above, and further in view of Bridges '827.



Kisman as modified discloses the apparatus of claim 8, and a pressure sensor (col. 8, lines 21-24) located adjacent the pump but does not disclose a controller. Kisman does teach the pump works more efficiently at higher pressures (col. 11, lines 36-39). Bridges teaches a controller operatively coupled to a pressure sensor and a drive rod to in response the toe pressure at the pump (col. 6, line 57-col. 1 line 2). As it would be advantageous to have when pumping efficiencies are not high at the lower pressures, it would be obvious to one of ordinary skill in the art to further modify the apparatus disclosed by Kisman to have a controller as taught by Bridges.

6. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kisman '121 in view of Bridges '827.

Kisman discloses establishing a pressure rate for the operation of the pump (col. 11, lines 36-39); monitoring the pressure present at the pump (col. 8, lines 21-24) and the pumps works more efficiently at higher pressures. but does not disclose directing the pump rate of the pumping response to the pressure at the pump. Bridges teaches a directing the pump rate of the pumping response to the pressure at a pump (col. 6, line 57-col. 1 line 2). As it would be advantageous to have the pump when pumping efficiencies are not high at the lower pressures, it would be obvious to one of ordinary skill in the art to modify the apparatus disclosed by Kisman to have a controller as taught by Bridges.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Giovanna M. Collins whose telephone number is 703-306-5707. The examiner can normally be reached on 6:30-3 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David J. Bagnell can be reached on 703-308-2151. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

gmc

  
**David Bagnell**  
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